AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A radiation polarizer for maximizing a transmission of a first polarization state while minimizing a reflection of the first polarization state, and for minimizing a transmission for an orthogonal second polarization state while maximizing a reflection of the second polarization state, said polarizer comprising:

a substrate;

at least one anti-reflection coating layer communicatively coupled to said substrate;

at least two nanostructures communicatively coupled to said at least one anti-reflection coating layer;

at least two groove layers, wherein each one of said at least two groove layers is interstitial to a respective one of said at least two nanostructures; and,

~~at least one dielectric~~ a plurality of dielectrics substantially between said substrate and said at least two groove layers, said ~~at least one dielectric~~ plurality of dielectrics having a refractive index greater than one,

wherein a communicative coupling between each one of said groove layers and the respective one of said nanostructures polarizes the radiation, wherein the radiation has an electric field orthogonal to said at least two groove layers, and wherein the radiation has a wavelength in a range of about 250 nm to ~~less than about a microwave wavelength~~ 30 microns.

2. (Original) The radiation polarizer of claim 1, wherein each of said groove layers comprises at least one selected from the group consisting of a plurality of grooves, holes, and gaps.

3. (Original) The radiation polarizer of claim 1, further comprising at least one protective layer formed atop said at least one substrate, said at least one anti-reflective coating, said nanostructures, and said groove layers.

4. (Original) The radiation polarizer of claim 1, further comprising at least one protective layer formed beneath said at least one substrate, said at least one anti-reflective coating, said nanostructures, and said groove layers.

5. (Original) The radiation polarizer of claim 1, wherein at least one of said nanostructures comprises a plurality of metallics.

6. (Original) The radiation polarizer of claim 1, wherein at least one of said nanostructures comprises a plurality of dielectrics.

7. (Original) The radiation polarizer of claim 1, wherein at least one of said groove layers comprises a dielectric having a lower conductivity than the respective one of said nanostructures.

8. (Currently Amended) The radiation polarizer of claim 7, wherein at least one of said groove layers comprises a first index of refraction, and wherein the respective one of said nanostructures has a second index of refraction ~~non-equivalent to~~ different from the first index of refraction.

9. (Original) The radiation polarizer of claim 7, wherein the dielectric is at least partially comprised of air.

10. (Original) The radiation polarizer of claim 9, wherein the dielectric is partially composed of a non-air dielectric.

11. (Original) The radiation polarizer of claim 1, wherein each of the nanostructures comprises at least one selected from the group consisting of a plurality of wires, a plurality of gratings, a plurality of pillars, and a plurality of rising shapes.

12. (Original) The radiation polarizer of claim 11, wherein each of the plurality of nanostructures may be parallel to each other of the plurality of nanostructures.

13. (Original) The radiation polarizer of claim 1, further comprising at least one etch stop layer that separates at least one of said at least two nanostructures from said substrate.

14. (Original) The radiation polarizer of claim 1, wherein a first of said nanostructures is separated from a second of said nanostructures by at least one selected from the group consisting of at least one spacer layer, at least one buffer layer, and at least one etch stop layer.

15. (Original) The radiation polarizer of claim 1, wherein each nanostructure of at least one of said nanostructures comprises a height in a range of about 50 nm to about 250 nm.

16. (Currently Amended) The radiation polarizer of claim 1, wherein each nanostructure of at least one said nanostructures comprises a width ~~in a range~~ of about 30 nm.

17. (Original) The radiation polarizer of claim 1, wherein said nanostructures comprise a transmissivity of greater than about 97%, and an extinction ratio of greater than about 40dB.

18. (Original) The radiation polarizer of claim 1, wherein said nanostructures comprise 180° of effective polarization separation in a space of less than about 0.2 mm.

19. (Original) The radiation polarizer of claim 1, wherein said nanostructures comprise an acceptance angle of up to about +/- 20°.

20. (Original) The radiation polarizer of claim 1, wherein each nanostructure of each of said nanostructures comprises at least one selected from the group consisting of a rectangle, a trapezoid, a semicircle, an oval, a convex hull, a stepped set, and a pillar.

21. (Original) The radiation polarizer of claim 1, further comprising a multilayer anti-reflective coating communicatively coupled to at least one of said at least two nanostructures.

22. (Currently Amended) A method for providing at least one of radiation polarizer and beam control, comprising:

communicatively coupling at least one anti-reflection coating layer to a substrate;

communicatively coupling at least two nanostructures to at least one of the at least one anti-reflection coating layer;

providing interstitially to a respective one of the at least two nanostructures at least two groove layers;

providing, substantially between said substrate and said at least two groove layers, ~~at least one dielectric~~ a plurality of dielectrics, said ~~at least one dielectric~~ plurality of dielectrics having a refractive index greater than one,

coupling the at least two groove layers and the at least two nanostructures to provide a pass wavelength in the range of about 250 nm to ~~less than about a microwave wavelength~~ 30 microns; and

allowing for an examining of radiation having a wavelength in a range of about 250 nm to less than about a microwave wavelength, and having an electric field orthogonal to the at least two groove layers, by allowing for a passing of the radiation through said coupling of the at least two groove layers and the at least two nanostructures and by allowing for a reflecting of the radiation from said coupling of the at least two groove layers and at least two nanostructures.

23. (Original) The method of claim 22, further comprising providing at least one protective layer atop the at least one anti-reflective coating, the nanostructures, and the groove layers.

24. (Original) The method of claim 22, further comprising providing at least one protective layer beneath the at least one anti-reflective coating, the nanostructures, and the groove layers.

25. (Currently Amended) The method of claim 22, further comprising composing at least one of the groove layers with a first index of refraction, and the respective one of said nanostructures with a second index of refraction ~~non-equivalent to~~ different from the first index of refraction.

26. (Original) The method of claim 25, wherein said composing comprises at least partially composing the at least one of the groove layers of air.

27. (Original) The method of claim 22, further comprising orienting each of the nanostructures parallel to each other of the nanostructures.

28. (Original) The method of claim 22, further comprising separating at least one of the at least two nanostructures from the substrate by at least one etch stop layer.

29. (Original) The method of claim 22, further comprising separating a first of the nanostructures from a second of said nanostructures by at least one selected from the group consisting of at least one spacer layer, at least one buffer layer, and at least one etch stop layer.

30. (Original) The method of claim 22, further comprising composing each nanostructure of the nanostructures to a height in a range of about 50 nm to about 250 nm.

31. (Original) The method of claim 22, further comprising composing each nanostructure of the nanostructures to a width in a range of about 30 nm.

32. (Original) The method of claim 22, further comprising composing the nanostructures to an acceptance angle of up to about +/- 20°.

33. (Currently Amended) A radiation controller, comprising:

means for communicatively coupling at least one anti-reflection coating layer to a substrate;

means for communicatively coupling at least two nanostructures to at least one of the at least one anti-reflection coating layer, wherein at least one of the at least two nanostructures is comprised of a plurality of nanostructures, each nanostructure of the plurality having a height in a range of about 50 nm to about 250 nm, and a width in a range of about 30 nm;

means for providing interstitially to a respective one of the at least two nanostructures at least two groove layers;

means for coupling the at least two groove layers and the at least two nanostructures to provide a pass wavelength in the range of about 250 nm to less than about a microwave wavelength;

means for providing substantially between said substrate and said at least two groove layers ~~at least one dielectric~~ <u>a plurality of dielectrics</u>, said ~~at least one dielectric~~ <u>plurality of dielectrics</u> having a refractive index greater than one; and,

means for allowing for examination of radiation having a wavelength in a range of about 250 nm to ~~less than about a microwave wavelength~~ 30 microns, and having an electric field orthogonal to the at least two groove layers.

34. (Currently Amended) The controller of claim 33, further comprising means for composing at least one of the groove layers with a first index of refraction, and the respective one of said nanostructures with a second index of refraction ~~non-equivalent to~~ different from the first index of refraction.

35. (Original) The controller of claim 34, wherein said means for composing comprises means for at least partially composing the at least one of the groove layers of air.

36. (Original) The controller of claim 33, further comprising means for orienting each of the nanostructures parallel to each other of the nanostructures.

37. (Original) The controller of claim 33, further comprising means for separating at least one of the at least two nanostructures from the substrate by at least one etch stop layer.

38. (Original) The controller of claim 33, further comprising means for separating a first of the nanostructures from a second of said nanostructures by at least one selected from the group consisting of at least one spacer layer, at least one buffer layer, and at least one etch stop layer.

39. (Currently Amended) A monolithic optical device, comprising:

optical radiation;

an optical radiation processor, comprising:

a substrate;

at least one anti-reflection coating layer communicatively coupled to said substrate;

at least two nanostructures communicatively coupled to said at least one anti-reflection coating layer, wherein at least one of said at least two nanostructures comprises a plurality of nanostructures each having a width in the range of about 30 nm;

at least two groove layers, wherein each one of said at least two groove layers is interstitial to a respective one of said at least two nanostructures; and,

~~at least one dielectric~~ <u>a plurality of dielectrics</u> substantially between said substrate and said at least two groove layers, said ~~at least one dielectric~~ <u>plurality of dielectrics</u> having a refractive index greater than one,

wherein a communicative coupling between each one of said groove layers and the respective one of said nanostructures polarizes the radiation, wherein the radiation has a wavelength in a range of about 250 nm to ~~less than about a microwave wavelength~~ <u>30 microns</u>.